

### REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated September 9, 2004. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

#### Status of the Claims

Claims 1, 6, 8-9, and 12-15 are under consideration in this application. Claims 7 and 10-11 are being cancelled without prejudice and disclaimer. Claim 1 is being amended, as set forth above, in order to more particularly define and distinctly claim Applicants' invention. New claims 13-15 are being added to recited other embodiments described in the specification.

#### Additional Amendments

The claims are being amended to correct formal errors and/or to better disclose or describe the features of the present invention as claimed. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

#### Formality Rejection

Claim 1 was objected to due to informalities and the Examiner has requested correction thereof. As indicated, the claims have been amended as required by the Examiner. Accordingly, the withdrawal of the outstanding informality rejection is in order, and is therefore respectfully solicited.

#### Allowable Subject Matter

Claim 7 would be allowed if it is rewritten in independent form to include the limitations of the base and any intervening claims.

The liquid crystal display device according to the invention (page 26, line 26 ~ page 29, line 17; Figs. 6A, 6B, 7, 8, 9A-9D), as now recited in claim 1, comprises: a first substrate **100 B** on a main surface thereof, a black mask **3** and color filters **2**, each arranged

in an aperture of the black mask 3 (page 10, line 24 ~ page 11, line 3), being formed; a liquid crystal layer 9; a second substrate 100A disposed opposite to the first substrate across the liquid crystal layer 9 and stuck to the first substrate 100B by a sealing material (page 23, lines 6-22) applied to peripheries of a main surface of the first substrate 100B facing the liquid crystal layer 9 and of a main surface of the second substrate 100A facing the liquid crystal layer 9; a stacked structure (page 4, line 25 ~ page 5, line 22) formed on the main surface of the second substrate 100A by stacking in order first signal lines 102, 104, an insulating film 105 covering the first signal lines 102, 104, and second signal lines 103 each overlappingly intersecting the first signal lines 102, 104 over the insulating film 105 therebetween; a plurality of pixel regions formed as being surrounded by respective neighboring first signal lines 102, 104 and second signal lines 103; and first spacers 1b and second spacers 1c both formed on the main surfaces of the first substrate 100B, and arranged corresponding to portions of the stacked structure located between neighboring pixel regions and in the liquid crystal layer 9 (e.g., Fig. 6). Each of the second spacers 1c is ordinarily spaced from the stacked structure formed on the second substrate 100A to accommodate the liquid crystal layer 9 therebetween, and each of the first spacers 1b ordinarily contacts directly with the stacked structure formed on the second substrate 100A. In particular, some of said portions of the stacked structure contacting with the first spacers 1b are thicker than others of said portions of the stacked structure corresponding to the second spacers 1c with the liquid crystal layer 9 interposed therebetween.

As claim 7 is being incorporated into claim 1, applicants submit that claims 1, 6, 8, 9, and 12 are in condition for allowance.

#### Prior Art Rejections

Claims 1, 6, 8-9 and 12 were rejected under 35 U.S.C. § 103(a) on the grounds of being unpatentable over U.S. Pat. No. 4,568,149 to Suguta et. al (hereinafter “Suguta”) in view of JP 8-304832 of Sato (hereinafter “Sato”). Claims 1, 6 and 8-12 were also rejected as being unpatentable over JP 2000-227596 of Yanagawa et al. (hereinafter “Yanagawa”) in view of Sato. The prior art references of Yanagawa et al. (2002/0113935), and Sato (2001/0052960) were cited as being pertinent to the present application. These rejections have been carefully considered, but are most respectfully traversed in conjunction with the JPO-cited references currently submitted via IDS.

The liquid crystal display device according to the invention (page 26, line 26 ~ page 29, line 17; Figs. 6A, 6B), as now recited in claim 13, comprises: a first substrate **100 B** including color filters **2**; a liquid crystal layer **9**; a second substrate **100A** disposed opposite to the first substrate **100B** across the liquid crystal layer **9**; first signal lines **102**, **104** formed on the second substrate **100A**; second signal lines **103** intersecting the first signal lines **102**, **104** with an insulating film provided therebetween; a plurality of pixel regions formed as being surrounded by respective neighboring first signal lines **102**, **104** and second signal lines **103**; a base pattern **11** (e.g., Fig. 8; P. 28, last paragraph) formed between neighboring pixel regions; first spacers **1b** formed above the base pattern on the first substrate **100 B**; and second spacers **1c** formed on a main surface of the first substrate **100 B** without the base pattern in-between. Each of the second spacers **1c** is ordinarily spaced from a stacked structure formed on the second substrate **100A** to accommodate the liquid crystal layer **9** therebetween, and each of the first spacers **1b** ordinarily contacts directly the stacked structure formed on the second substrate **100A** (p. 29, 1<sup>st</sup> paragraph; Fig. 8).

The invention applies two kinds of spacers denoted by the reference numerals **1b** (formed above the base pattern) and **1c** (formed directly on the main surface) of the first substrate **100B**, and arranged corresponding to a stacked structure formed on the second substrate **100A**. The invention does not internally/deliberately apply “any external force” to press the first and second spacers **1b**, **1c** against “areas between neighboring pixel regions on the second substrate” in the **ordinary** situation. Rather, the invention tried to cope with “an external force” accidentally/undesirably applied to the liquid crystal display device (p. 26, line 26 – p. 28, line 10; p. 3, line 18 – p. 4, line 16).

None of the cited prior art references teaches or suggests such “a base pattern **11** formed between neighboring pixel regions”, “first spacers **1b** formed above the base pattern on the first substrate **100 B** and second spacers **1c** formed on the main surface of the first substrate **100 B** without the base pattern in-between such that each of the second spacers **1c** is ordinarily spaced from a stacked structure formed on the second substrate **100A** to accommodate the liquid crystal layer **9** therebetween, and each of the first spacers **1b** ordinarily contacts directly the stacked structure formed on the second substrate **100A**” as recited in claim 13.

In contrast, Sugata does not have any such a base pattern formed between neighboring pixel regions. In additional, Sugata only disposes uniformly-thick spacer members **6a, 6b, 6c, 6d** on an insulating layer coating over non-transmissive members **12** (“*by forming a uniform film ... by vapor deposition, sputtering coating or the like* (col. 5, lines 44-50);” Col. 5, lines 2-4; Fig. 3(b)) as well as processes the spacer members in the same procedures together such that ALL spacers ordinarily contacting directly with the stacked structure formed on the second substrate. (Fig. 4(b)). Sugata simply does NOT have a group of spacers **1c** ordinarily spaced from a stacked structure formed on the second substrate **100A** to accommodate the liquid crystal layer **9** therebetween.

Sato merely shows first spacers **4** and second spacers **5** embedded in the crystal layer (Fig. 2), rather than formed on the main surface of the first substrate directly or on top of any base pattern which is formed between neighboring pixel regions. Sato does not specify spacers being formed between the neighboring pixel regions.

Yanagawa does not form any spacers directly on the main surface of the first substrate, and another group of spacers on top of a base pattern which is formed between neighboring pixel regions. On the contrary, as shown in Figs. 8-9 of the corresponding US patent App. Pub. No. 2002/0113935, Yanagawa forms one group of spacers **10A** in the Field A, and another group of spacers **10B** “*at a pixel region (Field B)* ([0078])”, rather than *between* neighboring pixel regions.

JP 2000-275654 of Asuma et al. (hereinafter “Asuma”) only describes a columnar spacer **SP** formed in the intersection part of two wirings. However, Asuma does not describe any base pattern which is formed between neighboring pixel regions, or one group of spacers directly on the main surface of the first substrate while another group of spacers on top of the base pattern.

JP 10-325959 of Hirakata et al. and its corresponding US Patent No. 6,465,268 (hereinafter “Hirakata”) form a first group of two spacers **220** at a driver circuit **103(104)** (col. 17, line 59) of the first substrate **101**, a second group of one spacer **202** formed on the second substrate **201**, and a third group of five spacers **220** formed at a pixel area **102** of the first substrate **101** (Fig. 18; col. 18, line 52). Although the first and third spacer groups are both formed on the second substrate **201** and of different thicknesses, the second group is formed *at* a pixel region, rather than *between* neighboring pixel regions. As to the second spacer group, it has a gap toward the first substrate **101** and positioned

between neighboring pixel regions to accommodate the liquid crystal layer 9 therebetween. However, it is directly formed on the main surface of the second substrate 201, rather than any base pattern which is formed between neighboring pixel regions. Hirakata simply does not provide any base pattern formed between neighboring pixel regions for any of the spacers to formed upon.

JP 10-123534 of Murouchi et al. and its corresponding US patent No. 6,067,144 (hereinafter "Murouchi") form a first group of spacers 4 of a height h1 and a second group of spacers 5 of a height h2 between neighboring pixel regions. However, the spacers are formed on black matrix layer 2a through 2d (col. 4, lines 33-34) on the color filter substrate 9 (Figs. 1, 3-4). Murouchi does not provide any base pattern formed between neighboring pixel regions for any of the spacers to formed upon.

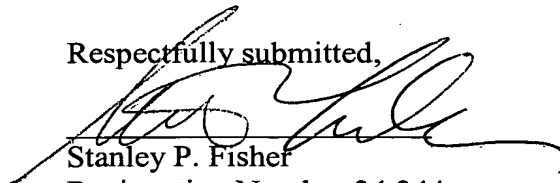
Applicants contend that neither Sugata, Sato, Yanagawa, Asuma, Hirakata, Murouchi, nor their combinations teaches or discloses each and every feature of the present invention as disclosed in independent claim 13. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references upon which the rejections in the Office Action rely, Applicants respectfully contend that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution

and allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

Respectfully submitted,



Stanley P. Fisher  
Registration Number 24,344

---

Juan Carlos A. Marquez  
Registration Number 34,072

**REED SMITH LLP**  
3110 Fairview Park Drive  
Suite 1400  
Falls Church, Virginia 22042  
(703) 641-4200

**January 7, 2005**

SPF/JCM/JT